

On a collection of Indian *Chlaenius* Bonelli (*Chlaeniini*: Carabidae: Coleoptera) in Muséum d'Histoire naturelle de Genève with descriptions of three new species

by

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With 5 figures

ABSTRACT

This paper deals with the study of a small but important collection of *Chlaenius* Bonelli collected from South India (Tamilnadu and Kerala) by Besuchet, Löbl and Mussard of Museum d'Histoire naturelle de Genève. The collection comprises five specimens belonging to four species three of which, namely *Chlaenius (Lissauchlaenius) besucheti*, *C. (Chlaeniellus) loebli* and *C. (Chlaeniellus) mussardi*, are new to science.

Genus *Chlaenius* was first established by BONELLI (1809) and subsequently enumerated by DEJEAN (1826) and LAFERTÉ (1851). The only monograph of the genus *Chlaenius* and its allies is that of CHAUDOIR (1876). Since then numerous species have been described chiefly by Bates and Andrewes from India, but no attempt has, so far, been made for a comprehensive work of this large genus. One of us (S. K. Saha) is currently engaged in revisionary work of the Indian species of the genus *Chlaenius* and has been able to study almost all Indian species.

Chlaenius is the largest and taxonomically most complex genus of the tribe *Chlaeniini* represented in all zoogeographic regions of the world and also predominant in India. So far, 125 species have been described from this region.

The representatives of the genus *Chlaenius* are predominantly bright metallic coloured beetles. They are usually found under stones along river side, under logs and leaf-litters in the forest and under vegetable debris in the humid places.

Measurements of the following dimensions have been taken and ratios have been calculated: length of head (LH), width of head (WH), width of eyes (WE), length of

pronotum (LP), apical width of pronotum (AWP), greatest width of pronotum (GWP), basal width of pronotum (BWP), length of elytra (LEI) and width of elytra (WEI).

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Chlaenius (Chlaenites) circumdatus Brulle

Chlaenius circumdatus Brulle', *Silberm. Rev. ent.* III, 1835: 283; FLETCHER, *Bull. Agric. Res. Inst. Pusa*, 89 1919: 31 (larva).

Chlaenius limbatus, Dejean, *Spec. gen. col.*, II, 1826: 306.

Chlaenius cinctus, Macleay, *Annul. Jav.*, 1825: 13.

Chlaenius javanus Chaudoir, *Bull. Soc. nat. Mosc.*, XXIX, 1856, III: 229.

Chlaenius cupricollis Nietner, *J. Asiat. Soc. Beng.*, XXX, 1856: 387.

Chlaenius circumdatus var. *xanthopleurus* Chaudoir, *Bull. Soc. nat. Mosc.*, XXIX, 1856, III: 230.

Chlaenius nicanus Motschulsky, *Bull. Soc. nat. Mosc.*, XXXVII, 1864, IV: 346.

Material examined: 1 ♂, 1 ♀, INDIA: KERALA, Kardamon H., Periyar env., Aranya Nivas, 950 m., 4.XI.72, Besuchet, Löbl and Mussard coll. (in Muséum d'Histoire naturelle de Genève).

Distribution: India, Ceylon, Burma, Malay Peninsula, Malay Archipelago, Laos, Cambodia, Vietnam, China, Formosa, Japan and Korea.

Remarks: This is one of the most common and widely distributed species. This can easily be recognised by the following characters: entire dorsal surface dark metallic green, lateral margin of elytra yellowish brown, pronotum cordate, head, pronotum and elytra sparsely and faintly punctate.

Chlaenius (Lissauchlaenius) besucheti sp. nov.

Description: Total length 11.2 mm., width 4.5 mm.

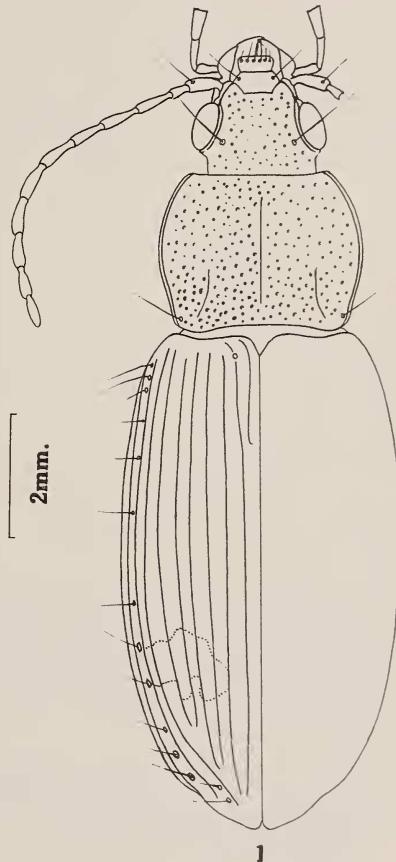
General appearance (Fig. 1) oblong-oval, dorsal surface of head and pronotum dark metallic green with reddish reflection, elytra obscure black with a yellowish spot near apical third on either side; mouth-parts reddish brown, antennae and femur yellowish brown, tibiae and tarsi slightly darker; ventral side blackish brown and moderately shining.

Head slightly convex, a little wider than long (WH/LH = 1.12); dorsal surface somewhat coarsely and densely punctate, finer punctures intermingled with coarser punctures, centre almost impunctate, rather faintly rugose near eyes; isolated patches of retinacular microsculpture slightly visible; clypeus finely rugose-punctate; labrum almost thrice as wide as long, faintly emerginate at apex; setiferous punctures arranged in a straight line at equal intervals; mandibles very short and wide, outer margin strongly curved, scrobe deep and upper margin of scrobe very distinct; palpi rather short and stout, apical segments slightly dilated and obliquely truncated at apex; antennae short, hardly reaching one fourth of elytra, 3rd segment equal to 4th; eyes moderately large and projecting (WE/WH = .40); neck short, not contracted below the eyes; occiput not swollen.

Pronotum rather flat, quadrate, widest near middle ($GWP/WH = 1.46$, $GWP/LP = 1.22$, $AWP/GWP = .64$, $BWP/GWP = .68$, $BWP/LP = .83$), apex little contracted, apical margin truncate, not bordered; anterior angles obtuse, moderately rounded, not projecting; lateral sides gently and almost evenly curved, lateral margins finely bordered, narrowly reflexed, widely so near posterior angles, reflexed margins translucent; base almost equally contracted as apex, basal margin not distinctly oblique near posterior angles, faintly sinuate at median area; posterior angles slightly obtuse, broadly rounded, not projecting; surface moderately coarsely, densely (more densely than in *C. tetragonoderus*) and uniformly punctate with fine pubescence; granular microsculpture moderately distinct; median line fine, transverse impressions obsolete; basal grooves slightly curved, rather shallow and elongated, confluent with the areas between basal grooves and recurred aleral margins near the base; posterior fixed setae very close to posterior angles.

Elytra convex, oblong, widest near middle ($WEI/GWP = 1.33$, $LEI/WEI = 1.66$, $LEI/LP = 2.88$); lateral sides moderately curved near shoulder, slightly curved, rather subparallel from below shoulder to widest point and distinctly sinuate near apex; basal margin slightly sinuate, humeri broadly rounded; striae distinct, rather distinctly and closely punctate; intervals moderately convex, finely and densely punctate with conspicuous pubescence; isodiametric microsculpture moderately distinct; yellowish spots irregularly rounded, extend outward from striae 2 to 8, colour on intervals 4 to 6 extends a little forward and on intervals 6 to 8 a little backward.

FIG. 1. — Dorsal view of *Chlaenius* (*Lissauchlaenius*) *besucheti* sp. nov.

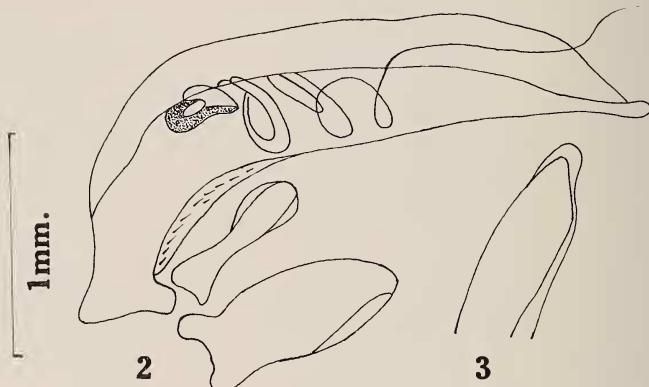


Ventral side rather faintly punctate and minutely pubescent; prosternum and inner side of proepisterna rather coarsely but faintly and sparsely punctate; prosternal process with raised margin at apex; mesosternum and inner sides of its episterna faintly punctate; metasternum and metepisterna coarsely, rather shallowly and moderately densely punctate, metepisterna more than twice as long as wide, outer margin distinctly sulcate; abdominal sternites finely and somewhat densely punctate, punctures faint, more so towards apex.

Legs moderately long, spinose setae of tibiae rather strongly developed; anterior femur without tooth on ventral side near the base; basal segments of anterior tarsi strongly dilated and distinctly transverse, dorsal surface finely and sprarsely punctate with fine pubescence.

Aedeagus (Figs. 2 & 3) rather abruptly bent near the base, then almost straight; apical lobe slightly differentiated with left margin little sinuate; internal filament coiled six times with prominent basal plate; left paramere oval, obtusely pointed at apex, right paramere narrow, its sides sub-parallel and broadly rounded at apex.

Holotype ♂, INDIA: TAMILNADU, Anamalai Hills, Aliyar Dam, 300 m., 17.XI.72, Besuchet, Löbl and Mussard coll. (in Muséum d'Histoire naturelle de Genève). Aedagus dissected out, dehydrated, mounted on a plastic board and pinned with the holotype.



FIGS. 2 & 3.

Aedeagus of *Chlaenius (Lissauchaenius) besucheti* sp. nov.
2. Lateral view; 3. Dorsal view of apical lobe.

Discussion: This species is closely related to *Chlaenius tetragonoderus* Chaudoir in its almost quadrate pronotum and fine and dense punctation of elytral intervals but can easily be distinguished from the latter by its almost impunctate centre of head, denser and uniform punctuation and elongated shallow basal grooves of pronotum.

Chlaenius (Chlaeniellus) loebli sp. nov.

Description: Total length 9.1 mm., width 3.9 mm.

General appearance (Fig. 4) rather short, oval; dorsal surface of head and pronotum dark shining metallic green, elytra moderately shining, copper red with yellowish lateral margins obscurely extending over 9th intervals; mandibles and labrum reddish brown, palpi, antennae and legs yellowish brown; ventral side dark reddish brown, shining; epipleurae of elytra yellowish.

Head convex, distinctly wider than long ($WH/LH = 1.24$); dorsal surface finely and rather faintly punctate on lateral sides and frons, a few coarse punctures with minute pubescence intermingled with fine punctures on lateral sides, faintly rugose on lateral sides and centre; granular microsculpture distinct on vertex; clypeus very finely and sparsely punctate, rather faintly rugose on lateral sides below the fixed setae; labrum twice as wide as long, truncate at apex, setiferous punctures normal; mandibles elongated, outer margin gently curved, scrobe moderately deep, upper margin of scrobe distinct;

palpi slender and elongated, apical segments slightly oval, hardly dilated and narrowly truncated at apex; antennae slender, moderately elongated reaching one third of elytra; eyes large and projecting ($WE/WH = .39$); neck short, not contracted below the eyes.

Pronotum convex, subcordate, widest little anterior to middle ($GWP/WH = 1.44$, $GWP/LP = .133$, $AWP/GWP = .65$, $BWP/GWP = .77$, $BWP/LP = 1.05$); apex moderately contracted, apical margin truncate, bordered on lateral half on either side; anterior angles obtuse, broadly rounded, not projecting; lateral sides moderately curved and more contracted towards apex and almost obliquely rounded towards base, not appreciably sinuate near posterior angles; lateral margins somewhat widely bordered and slightly reflexed, reflexed margins translucent; base little contracted and distinctly wider than apex, basal margin slightly oblique near posterior angles and faintly sinuate at median area; posterior angles obtuse, hardly rounded, not projecting; surface coarsely and irregularly punctate with conspicuous golden pubescence; puncture denser on basal area and on basal grooves, sparser on lateral sides and on apical area, a longitudinal row of punctures on either side of median line and in another set of irregular row arising from inner margin of basal grooves and running along the disc on either side; granular microsculpture distinct; median line fine, transverse impressions moderately distinct; basal grooves moderately deep, short and wide, areas between basal grooves and reflexed lateral margins rather depressed.

Elytra convex, rather short and wide, oval, widest near middle ($WE/GWP = 1.50$, $LEI/WEI = 1.46$, $LEI/LP = 2.95$); lateral sides moderately curved at shoulder, slightly so from below shoulder to widest point and slightly sinuate near apex; basal margin little sinuate, humeri distinctly angulate; striae distinct, rather distinctly and closely punctate; intervals almost flat, somewhat finely and densely punctate with conspicuous golden pubescence; retinacular microsculpture slightly visible; epipleurae flat, thoroughly punctate and pubescent.

Ventral side thoroughly punctate and pubescent; all the sternites somewhat coarsely and densely punctate except prosternum sparsely punctate along middle; prosternal process not bordered at apex; metepisterna less than twice as long as wide, sulcate on outer margin, faintly so near anterior end; abdominal sternites moderately coarsely, densely and thoroughly punctate with conspicuous yellowish pubescence.

Legs moderately elongated, spinose setae of tibiae rather weakly developed.

Holotype ♀, INDIA: KERALA, Cardamon H., Periyar Lake, Aranya Nivas, 10.XI.72, Besuchet, Löbl and Mussard coll. (in Muséum d'Histoire naturelle de Genève).

Discussion: This species is closely related to *Chlaenius comans* Andrewes in its shape and punctuation of pronotum and yellow lateral margin of elytra, but can easily be distinguished from the latter by its smaller size, impunctate vertex of head, flat intervals of elytra and sparsely prosternum.

Chlaenius (Chlaeniellus) mussardi sp. nov.

Description: Total length 11.7 mm., width 4.7 mm.

General appearance (Fig. 5) rather short, oval; dorsal surface of head and pronotum dark metallic green, the latter with reddish reflection, elytra blackish, shining; mouth parts dark red, first segment of antennae yellowish brown, remaining segments of antennae and legs black; ventral side shining black.

Head convex, distinctly wider than long ($WH/LH = 1.30$); dorsal surface coarsely rugose-punctate on lateral and posterior sides, frons minutely and sparsely punctate on middle, centre with a few smaller punctures, otherwise impunctate and glabrous:

microsculpture indistinct; clypeus smooth and impunctate; labrum more than twice as wide as long, faintly emarginate at apex, setiferous punctures arranged normally; palpi rather slender and elongated, apical segments of labial palpi slightly and that of maxillary hardly dilated; antennae short, reaching only one fourth of elytra, third

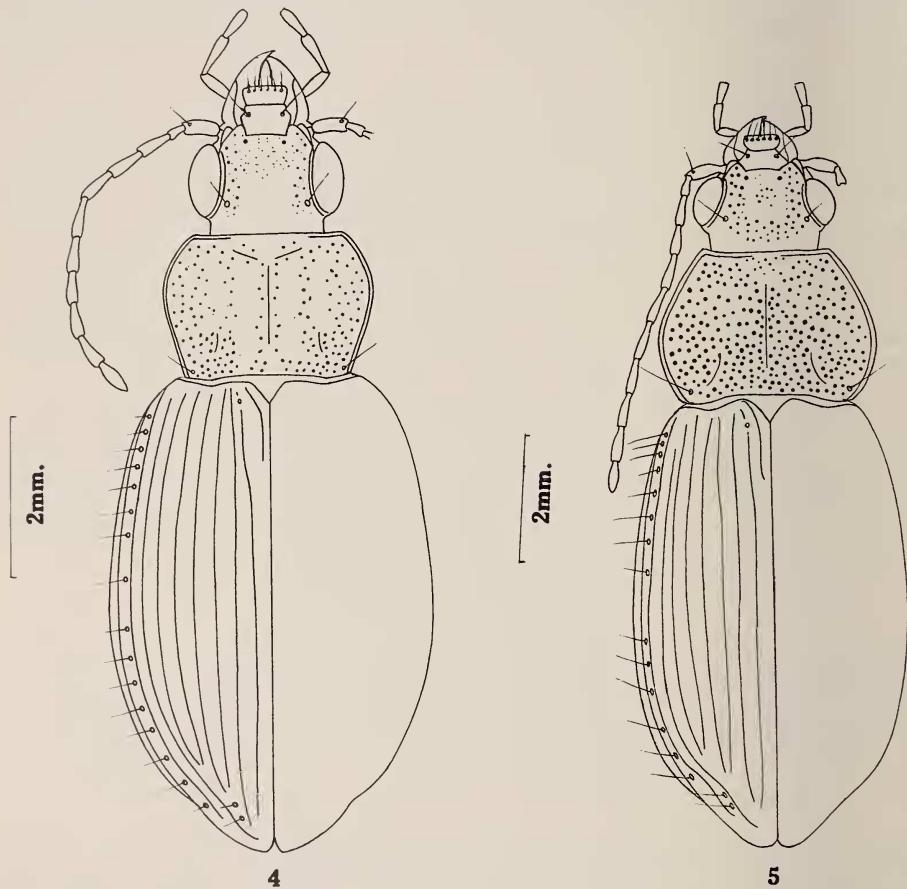


FIG. 4. — Dorsal view of *Chlaenius (Chlaeniellus) lobli* sp. nov.

FIG. 5. — Dorsal view of *Chlaenius (Chlaeniellus) mussardi* sp. nov.

segment equal to 4th and with few setae; eyes moderately large ($WE/WH = .31$); neck moderately elongated, not contracted below the eyes; occiput swollen.

Pronotum convex, transverse, slightly oval, widest little behind middle ($GWP/WH = .1.38$, $GWP/LP = .144$, $AWP/GWP = .62$, $BWP/GWP = .88$, $BWP/LP = 1.28$); apex strongly contracted, deflated towards anterior angles, apical margin truncate, almost entirely bordered on either side; anterior angles obtuse, rather narrowly rounded, not projecting; lateral sides strongly curved, more contracted towards apex, and not sinuate near posterior angles; lateral margins finely bordered, narrowly reflexed, widely

so near posterior angles; base little contracted, basal margin not distinctly oblique near posterior angles, faintly sinuate at middle; posterior angles obtuse, broadly rounded, not projecting; surface coarsely and densely punctate with conspicuous yellowish pubescence, punctures denser on basal area and sparser on disc; pubescence more prominent on antero-lateral sides; granular microsculpture slightly distinct; median line fine, not reaching extremities, transverse impressions not distinct; basal grooves moderately deep, wide and curved, not reaching the basal margin; areas between basal grooves and lateral margins slightly convex; posterior fixed setae close to posterior angles and a little inside the lateral margins.

Elytra convex, rather short, oval, widest little behind middle ($WEI/WP = 1.30$, $LEI/WEI = 1.53$, $LEI/LP = 2.88$); lateral sides moderately curved at shoulder, slightly curved from below shoulder to widest point and more or less distinctly sinuate near apex; basal margin slightly sinuate, humeri rounded; striae fine, distinctly and closely punctate; intervals convex, finely and densely punctate with conspicuous yellowish pubescence; isodiametric microsculpture moderately distinct; epipleurae flat, impunctate and glabrous.

Ventral side irregularly punctate and pubescent; prosternum very coarsely and sparsely punctate along middle, densely so on lateral sides; prosternal process with distinct raised margin at apex; proepisterna coarsely and densely punctate on inner sides, impunctate on postero-lateral sides; mesosternum with a few faint punctures on anterior side; metasternum coarsely and densely punctate, metepisterna twice as long as wide, outer margin sulcate, with only 2-3 faint punctures; abdominal sternites 1-3 finely and faintly punctate with minute pubescence along middle of its length, sternites 4-6 impunctate and glabrous.

Legs moderately elongated, spinose setae of tibiae rather strongly developed.

Holotype ♀, INDIA: KERALA, Kardamon H., Periyar env., Aranya Nivas, 950 m., 4.XI.72, Besuchet, Löbl and Mussard coll. (in Muséum d'Histoire naturelle de Genève).

Discussion: This is a distinct species unlike other Indian species of *Chlaenius* by its pronotum coarsely and densely punctate with conspicuous pubescence and posterior fixed setae a little away from posterior angles. Probably it is needed to establish a separate subgenus for this species which will be dealt in our revisionary work on Indian *Chlaenius*.

REFERENCES

- BONELLI, F. A. 1809. Observations entomologiques (Caraben). *Memorie Accad. Sci. Torino* 18: 21-78.
 CHAUDOIR, B. M. 1856. Mémoire sur la famille des carabiques (6^e partie). *Bull. Soc. Nat. Moscou* 29: 187-291.
 — 1876. Monographie des chléniens. *Annali Mus. civ. Stor. nat. Giacomo Doria* 8: 1-315.
 DEJEAN, P. F. M. A. 1826. Spécies général des coleoptères de la collection de M. le comte Dejean. 2: 1-501.
 LAFERTÉ-SÉNECTÈRE, M. F. T. 1851. Révision de la tribu des platellimanes. *Annls. Soc. ent. Fr.* (2) 9: 209-294.

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